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ABSTRACT

Two studies of integrated language instruction for students of English as a second language (ESL) are reported. The first had two objectives: to (1) investigate the effects of writing activities on the comprehension and retention of content area reading and (2) examine the relationship between the students' ability to select the main idea and their comprehension and retention scores. The subjects, 36 bilingual middle and secondary school students, read brief social studies texts, with one group writing summaries of the passages. Analysis of the subjects' comprehension, retention, and identification of the main ideas suggests that merely incorporating the summary-writing exercise did not improve comprehension or retention, but those students who could identify main ideas and incorporate them into the summaries performed better on the comprehension and retention measures. The second study examined the effects of brainstorming and clustering on reading comprehension. The subjects, 36 students from low socioeconomic groups in grades 2-5, were given readings and comprehension tests. Half the group was also exposed to brainstorming and given an opportunity to generate and organize ideas before and after the readings. The subjects exposed to brainstorming performed significantly better on the comprehension measure, suggesting that the technique is useful. (MSE)

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EVALUATING THE EFFECTIVENESS OF WRITING ON THE COMPREHENSION AND RETENTION OF CONTENT READING IN BILINGUAL STUDENTS

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EVALUATING THE EFFECTIVENESS OF WRITING ON THE COMPREHENSION AND RETENTION OF CONTENT READING IN BILINGUAL STUDENTS

Research in developing literacy skills in English as a second language (ESL) is particularly critical in light of three significant national trends: (1) demographic changes; (2) low minority student achievement in literacy, math, and science; and (3) school drop-out levels. According to the 1980 Census, over 16 million Americans speak a language other than English at home. This fact, coupled with significant growth rates (e.g., the Hispanic population alone showed a 61% growth over the last decade), presents an imminent challenge for the school system.

At present, this challenge is not being met successfully as national statistics show that the limited English proficient (LEP) learners are scoring below the national norm in science, math, vocabulary, reading, and civics (Average Achievement Test Scales, 1982). The inability to master the language medium of the classroom is partly responsible for this lack of success which feeds directly into inflationary drop-out rates (see e.g. Valverde, 1984). The Hispanic Policy Development Project (1984) reports that 45% of Hispanics leave school before the 10th grade. This statistic is an obvious indication that the current educational system has failed to meet the needs of this population (National Board Commission on Precollege Education in

Mathematics, Science, Technology, 1983).

Considering the need for literacy skills to succeed in our highly technological and scientific society, more research needs to be done in the area of language and literacy development for the second language learner. Cognitive strategies designed specifically to enhance literacy skills of ESL learners need to be developed.

Cognitive approaches to learning stress that learning is an active, constructive, and goal-oriented process that is dependent upon the mental activities of the learner (Brown, Campione and Day, 1983; Flavell, 1981). This cognitive orientation focuses on developing the mental activities of the learner to organize material they are learning in meaningful ways (Shuell, 1985; Tulving, 1968). Sternberg (1984) suggests that the learner must sift out relevant information from irrelevant, combine selected information in such a way as to make it interpretable, and to perceive the relationship of old information to new learning.

Recent inquiry into the development of reading, writing, and thinking skills suggests the importance of stressing the interrelationship of these skills within a total process of constructing meaning rather than focusing on discrete skills. Wittrock (1986) points out that both reading and writing require the active construction of meaning. However, the type of logic required to construct meaning, to make logical connections, and to organize information appears to vary across cultures (Kaplan, 1980). Consequently, strategies to generate a particular type of

organization of ideas are not inborn and must be taught to provide learners with more cognitive resources to develop comprehension skills. In addition, the role of writing in promoting learning of content area information has been of interest to theorists and researchers recently (Moffett, 1981; Applebee, 1984; Fulwiler, 1987). Writing across the curriculum has focused on writing as a means of learning as well as an end product. The use of writing activities to supplement reading in content areas would appear to offer a particularly powerful learning tool for the student for whom English is a second language.

Several studies, however, have found that writing instruction does not generally take place in grades 1 through 12 (Applebee, 1981, 1982; McLeod, 1986). In addition, for the English as a second language (ESL) student, writing instruction is reduced to grammar exercises (Raimes, 1980) and generally to activities where form precedes content (Widdowson, 1978; Zamel, 1982, 1983). Bermudez and Padron (1986) argue that ESL students, in perceiving writing as a separate language activity and not as a process conducive to generating thoughts and ideas, are not using the strategies which writing researchers identify as necessary to become an experienced writer. Furthermore, instruction in the use of these strategies is generally lacking (Padron & Bermudez, 1987, 1988.)

Considering the obvious need for investigation in this critical area, the researchers have designed the following

studies to investigate the effects of integrating writing, reading, and thinking activities for ESL students.

STUDY 1

The purpose of the initial study was to investigate the effects of writing activities in the comprehension and retention of content area reading for ESL learners. In addition, the study examined the relationship between the students' ability to select the main idea and their comprehension and retention scores.

Subjects

Thirty-six bilingual students in grades 6-11 participated in the study. A stratified random sampling technique based on LAS scores (Levels 1-5) was employed to assign 18 students to each of two groups, i.e., the experimental and the control group. Five social studies reading passages taken from the same unit of the class text were read by each group. The passages related to the history, people, and industries of Vermont. Passages ranged in length from 200 to 250 words. Frye's readability formula was calculated on each passage. In no passage did the readability level exceed 2.5 level of difficulty. Since the ITBS reading levels of the group ranged from 2.9 to 5.0, the difficulty of the passage was appropriate for all subjects. The passages were retyped as handouts and key terms essential to the understanding of the passage were defined and translated into Spanish.

Methodology

Subjects in the treatment group were given one passage a day

to read silently and were told that they would be tested over the material after reading. Time allotted for silent reading was 15 minutes. Subjects were then instructed to write a sentence or two summarizing what they had read. They were given an additional 10 minutes to do the summary. Students were allowed to keep the text before them during the summary writing. According to Flower (1979), the summaries would be described as "writer-based". That is, summaries were prepared by the students for their own use and not to be handed in for a grade. The typed passages were not available to the student during the subsequent test.

The teacher worked with both groups during different class periods using the same reading selections. The control group was also told that they would be tested over the reading material. When they finished reading they were given the additional minutes and told to go back and reread the passage in preparation for the test.

Both groups were tested on the same 6-item measure immediately after reading the individual selections. The process was repeated for five consecutive days. These five measures were summed over to yield a 30-item comprehension measure. Exactly one week later, the students were retested on all 30-items which had been combined to make one test.

The 6-item tests used in conjunction with each reading selection and combined to produce the measures of comprehension and retention were designed to incorporate items written at the

literal, interpretive, and applied levels. Separate t-tests for non-independent means were used to compare performance of the treatment and control groups on the 30-item comprehension measure and the 30-item retention measure for treatment and control groups.

In addition, the summaries produced were analyzed for number of idea units, number of main ideas, and number of words produced. These summary scores, available only on the treatment group subjects, were then correlated with performance on the comprehension and retention measures.

Results

No significant difference was found between the treatment and control groups on either the comprehension measures ($t = 1.07$, $df = 17$, $p < .29$) or the retention measures ($t = 1.95$, $df = 17$, $p < .07$). The correlation between the number of idea units produced and the two reading comprehension measures was not significant ($r=.14$ and $.11$, $df=16$, respectively), nor was the correlation between number of words and comprehension or retention scores ($r=.17$ and $.25$, $df=16$, respectively). The number of main ideas included in the writing activity, however, correlated significantly with both the comprehension acquisition measures ($r = .62$, $p < .01$, $df = 16$) and the retention measures ($r = .59$, $p < .01$, $df = 16$).

(Refer to Table 1).

Table 1 Pearson Product-Moment Correlation

	Idea Units	Words	Main idea
Comprehension	.14	.17	.62**
Retention	.11	.25	.59**

** $p<.01$

Discussion

Merely incorporating a writing activity in which ESL students wrote short summary sentences of the main ideas in the content area reading passages did not improve the comprehension and retention of the selection. Students given additional time to reread the passage performed equally as well as the group that incorporated writing. Perhaps reading and writing are perceived as two very distinct activities by the ESL student, and the benefits of one skill do not necessarily transfer into the other. When the summaries were examined for content, however, those students who were able to identify main ideas and incorporate them into their summaries performed better on both the comprehension and retention measures. Summaries in general for both groups were sketchy indicating a need for some idea generating strategies prior to writing. A significant relationship was found between number of main ideas included and performance on both comprehension and retention measures.

STUDY 2

The purpose of the second study was to examine the effects of brainstorming and clustering on reading comprehension. It was hypothesized that the group using these cognitive strategies prior to and after reading the selection would score significantly higher on the comprehension measure.

Subjects

The subjects were 36 ESL students from low SES in grades 2,3,4, and 5. A stratified random technique was used to match these students using the IDEA Language Proficiency Test scores to assign them to either the control or the experimental group. In addition, a *t*-test for correlated means was used to insure initial equivalence of these groups. No significant difference was found between the groups ($t(17)=.42, p>.05$].

Methodology

Subjects in the treatment group were exposed to brainstorming prior to reading the selection. The information generated was displayed on the chalkboard. These students then read the selection silently. The next day further brainstorming followed and the new concepts were added to the ones previously collected. The teacher then clustered these facts to visually represent the content of the reading selection. The students were asked to respond to a 6-item multiple choice test containing questions at the factual, interpretative, and evaluative levels. The procedure was repeated every two days to include three reading selections. Subjects in the control group were given an

explanation of the vocabulary involved, were shown a picture related to the content, and were then asked to read. Using prepared questions, the teacher discussed the reading selection. Next, these students were given the 6-item tests described above. The procedure was repeated every two days with the new reading selection. The instructional time was the same for both groups of students. The three 6-item tests were summed over to yield one 18-item retention measure.

Results

A *t*-test for non-independent means indicated that the group receiving the treatment (i.e., brainstorming and clustering) performed significantly better on the comprehension measure [$t(17) = 4.51$, $p<.001$).

Table 2. Means, standard deviations, and *t* value of treatment and control groups

	M	SD	*t*
Experimental	10.8	2.07	4.51***
Control	8.4	2.31	

*** $p<.001$

Discussion

These results indicate that these strategies should be incorporated in ESL writing instruction to aid students' ability to select and organize ideas.

Clearly, classroom teachers must provide direct instruction in developing idea generation and organization. ESL students, like learners in general, do not innately possess this important reading skill. Writing activities should be a part of this instruction for at least two reasons. First, reading and writing need to be viewed as interdependent and mutually inclusive units of communication. ESL students, in particular, need to think, read, and write in an integrated manner as they are developing communicative skills in English. Secondly, by nurturing writing, higher order thinking skills are also fostered.

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